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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/970,100	10/02/2001	Vishnu K. Agarwal	500453.04	2699

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DORSEY & WHITNEY LLP
INTELLECTUAL PROPERTY DEPARTMENT
SUITE 3400
1420 FIFTH AVENUE
SEATTLE, WA 98101

EXAMINER

FLETCHER III, WILLIAM P

ART UNIT PAPER NUMBER

1762

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/970,100	Applicant(s) AGARWAL ET AL.	
	Examiner William P. Fletcher III	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 6 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 55,57,59,69,70,72 and 84-89 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 55,57,59,69,70,72 and 84-89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see the response, filed 1/29/2004, with respect to the objections and rejections under 35 U.S.C. § 112, set-forth in the Office action mailed 10/29/2003, have been fully considered in view of applicant's amendment and are persuasive. These objections and rejections have been withdrawn.

2. Applicant's arguments filed 1/29/2004, with respect to the art rejections set-forth in the Office action mailed 10/29/2003, have been fully considered but they are not persuasive.

Applicant correctly describes the teaching of Martin: the make coat adhesively binds the abrasive particles to the underlying substrate prior to applying the hard carbon coating layer. Applicant argues that this teaching does not read on the claimed invention: "the various embodiments [of which] deposit the pattern elements directly onto the substrate without embedding the particles into a resinous and polymeric make coat material." The examiner disagrees. While applicant's claims recite depositing/distributing the pattern elements "over a first surface of a polymeric backing member," the claims do not exclude embedding the particles into a polymeric make coat. The examiner noted, in the Office action mailed 10/29/2003, that the claims are open to the backing member's being inclusive of other layers coated atop the substrate, so long as those layers are polymeric, and that Martin explicitly teaches polymeric make coats at 7:62-66. Given this interpretation, with reference to Martin's Fig. 1, the substrate-make coat composite 12-14 reads on applicant's claimed "backing member." Abrasive particles 15 are deposited/distributed thereon and hard carbon coating layer 16 is coated there-over, clearly contacting the backing member at intervals between the abrasive particles. Martin's other

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embodiments, illustrated in Figs. 2 and 3, similarly read on applicant's claimed invention. Consequently, this argument is not persuasive.

With respect to Martin's embodiment illustrated in Fig. 4, applicant argues that the examiner combined elements from two different embodiments of Martin's invention. The examiner disagrees. It is not the examiner's position that the embodiments illustrated in Figs. 1 and 4, taken together, read on applicant's claims. Rather, it is the examiner's position that the embodiment in which abrasive particles are embedded in a make coat (illustrated in Fig. 1), as well as the embodiment in which the abrasive particles are distributed in a slurry (illustrated in Fig. 4), each, individually, read on applicant's claimed invention. This is clearly set-forth at 4:24-5:7 of the Office action mailed 10/29/2003. Applicant has amended the claims to recite that the cover layer contacts portions of the backing member. Since Martin discloses that the abrasive particle slurry may be formed into "discrete isolated shapes" (7:42-61), it is the examiner's position that over-coating such shapes with the hard coating layer inherently results in contact between the backing member and the hard coating layer. Consequently, this argument is not persuasive.

Drawings

3. The drawings were received on 1/29/2004. These drawings are acceptable.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. **Claims 55, 57, 59, 69, 70, 72, and 84-89 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.** The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant amended independent claims 55 and 69 to recite that the cover layer is “rigid” and “non-polymeric.” The originally-filed disclosure supports neither of these limitations. Applicant discloses the cover layer material at 10:27-11:9 of the specification, where the cover layer is described neither as rigid nor non-polymeric. While non-polymeric substrates that may be considered rigid, such as oxides and ceramics, are disclosed, the originally-filed disclosure does not support *any and all* rigid, non-polymeric materials. Possession of a specie or species does not support possession of an entire genus.

Further, “non-polymeric” is a negative limitation (i.e., it may be rendered “the cover layer is not polymeric”). It has been held that negative limitations, which did not appear in the specification as-filed, introduce new concepts and violate the description requirement of 35 U.S.C. § 112. *Ex parte Grasselli et al.*, 231 USPQ 393 (BdPatApp&Int 1983): “It might be added that the express exclusion of certain elements implies the permissible inclusion of all other elements not so expressly excluded. This clearly illustrates that such negative limitations do, in fact, introduce new concepts.”

Applicant is *strongly encouraged*, in traversing this rejection, to cite (i.e., page and line number) those portions of the originally-filed disclosure that applicant contends support the limitations in question.

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6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claims 55, 57, 59, 69, 70, 72, and 84-89 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

8. The term "rigid" in claims 55 and 69 is a relative term which renders the claim indefinite. The term "rigid" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how and in what sense the cover layer of the invention is "rigid." Further, it is unclear what degree of rigidity is considered "rigid" within the context of the invention.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. **Claims 55, 69, and 84-89 are rejected under 35 U.S.C. 102(b) as being anticipated by Martin et al. (US 5,551,959 A).**

Martin teaches a method of manufacturing an article in which a backing member is coated first with an abrasive material and then over-coated with a hard carbon coating layer, specifically diamond-like carbon (DLC) (abstract and 3:65-14:48).

It is the examiner's position that both the embodiment illustrated in Fig. 1 and the embodiment illustrated in Fig. 4, individually, read on the claims. With reference to Fig. 1, the examiner notes that Martin teaches that a substrate 12, (preferably a polymeric film, such as polyester terephthalate) is first coated with a make coat 14 to which the abrasive particles 15 (which read on "pattern elements") are adhered (6:1-7:67). The make coat is preferably an organic, thermoplastic or thermosetting polymer (7:42-61 and 12:64-13:42). The substrate-make coat composite 12-14 reads on applicant's claimed "polymeric backing member." DLC layer 16 contact the backing member at intervals between the abrasive particles.

With reference to Fig. 4, the make coat resin and the abrasive particles are applied simultaneously as a slurry, resulting in three-dimensional, discrete, isolated shapes projecting outward from the surface of the substrate (5:11-36; 7:42-46; and 10:59-60). Since Martin discloses that the abrasive particle slurry may be formed into "discrete isolated shapes" (7:42-61), it is the examiner's position that over-coating such shapes with the hard coating layer inherently results in contact between the backing member and the hard coating layer.

Both the abrasive particles 15 in Fig. 1 and the projections 47 in Fig. 4 read on forming a plurality of contour surfaces over the first surface of the substrate. The contour surfaces, coated with the DLC coating layer form nodules projecting away from the surface of the backing member (Fig. 1:16; Fig. 4:48; and 6:35-7:67). The DLC layer may or may not be over-coated with a size coat (Fig. 1:18 and 7:28-41). It is the examiner's position that a diamond-like coating reads on a "hard, rigid, non-polymeric material."

With specific respect to claims 84-89, Martin teaches that the preferred substrate is a polymeric film, such as polyester terephthalate film (10:60-61). Applicant discloses, at page 10

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of the specification, the specific example of MYLAR, which is a polyester terephthalate film. Further Martin teaches that the substrate can be a *flexible* material such as a polymeric film, primed polymeric film, cloth (including greige cloth), paper, vulcanized fiber, thermoplastics, non-wovens, metal (including metal substrates, metal foils, and the like), treated versions thereof, and combinations thereof (12:49-60). Thicker *rigid* polymeric composites or metal backing may also be used as the substrate. Absent clear and convincing evidence to the contrary, it is the examiner's position that this disclosure of a wide variety of substrates including sheets and sheet-like films of flexible or rigid polymers read on the compressible, incompressible, and cured resin substrates claimed.

Lastly, Martin teaches that a wide variety of workpieces may be machined by the abrasive article manufactured according to the above method. Martin does not specifically state that the workpiece is a micro-electronic substrate assembly. This is, however, merely a statement of intended use. Since Martin anticipates all of applicant's claimed method steps, and unless some critical method step has not been recited in the claims, it is the examiner's position that the abrasive article manufactured according to the method of Martin is inherently capable of planarizing a microelectronic-device substrate assembly.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. § 102(e), (f) or (g) prior art under 35 U.S.C. § 103(a).

13. **Claims 57, 59, 70, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. (US 5,551,959 A), as applied to claims 55 and 69, respectively, above, in further view of James et al. (US 6,069,080 A).**

The teaching of Martin is detailed above. Further, the make coat resin and abrasive particles may be applied as slurry and that application may be by methods known in the art (6:52). Martin does not teach: with respect to claims 57 and 70, that depositing a plurality of pattern elements over the first surface comprises coating the first surface with a liquid containing the pattern elements and evaporating the liquid to leave the pattern elements directly on the first surface of the backing member; and, with respect to claims 59 and 72, that coating the first surface with the liquid containing the pattern elements comprises spraying the first surface of the backing member with a solution including the liquid and the pattern elements.

James teaches a methods of manufacturing a fixed-abrasive polishing pad in which solid abrasive particles are dispersed in a aqueous solution of a resin binder and sprayed onto the substrate. "Each layer is dried...before application of subsequent layers" (i.e., spray coating

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with subsequent evaporation) (11:40-63). Furthermore James teaches that the sizes that the sizes of the abrasive particles “are preferably in the range of 10 – 1000 nm” (10:13-15).

Because Martin teaches that the abrasive slurry may be applied by a method known in the art, one of ordinary skill in the art would have looked to the prior art to find methods of applying the slurry. Further, James teaches spray coating particles from 10 – 1000 nm and Martin teaches abrasive particles from 0.1 – 1500 microns (11:46-50). It would, therefore, have been obvious to one of ordinary skill in the art to modify the method of Martin so as to apply the abrasive particles by spray coating according to the method of James. One of ordinary skill in the art would have been motivated by the desire and expectation of successfully coating the abrasive particles on the backing.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (571) 272-1419. The examiner can normally be reached on Monday through Friday, 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WPF 4/14/2004

William P. Fletcher III
Examiner
Art Unit 1762


SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700